

ABSTRACT

The present invention includes an apparatus and method for continuous and point level liquid level detection in a closed container or pipe having an inaccessible interior volume such that it is difficult to retrofit these tanks with a level gauge that
5 operates within the storage volume. The invention is based on a frequency domain analysis of the combined storage tank/fluid or pipe/fluid response to localized ultrasonic energy, and can be implemented using several excitation and signal analysis procedures, taking advantage of the transmission properties of the vessel wall in the vicinity of one of its longitudinal thickness resonances. Thus, significantly lower peak
10 excitation voltages are required than with pulse-echo ultrasonic techniques.